AMENDMENTS TO THE DRAWINGS:

- The two (2) attached sheets of drawings in **APPENDIX A** replace the sheets depicting FIG. 1 and FIG. 6 that were originally filed with the above-identified application.

- The changes made to FIG. 1 and FIG. 6 are described in the **Remarks/Arguments** section beginning on page **9** of this paper.

APPENDIX A: Replacement Sheets for FIG. 1 and FIG. 6.

REMARKS

In response to the First Office Action mailed March 24, 2006 (hereinafter "Office Action"), claims 2, 11, 14, & 19-20 have been cancelled without prejudice or disclaimer, and claims 1, 3-10, 12-13, and 15-18 have been amended. No claims have been newly added. Therefore, claims 1, 3-10, 12-13, and 15-18 are pending. Support for the instant amendments is provided throughout the as-filed Specification. Thus, no new matter has been added. In view of the foregoing amendments and following comments, allowance of all the claims pending in the application is respectfully requested.

INFORMATION DISCLOSURE STATEMENT

Applicants thank the Examiner for considering the references cited in the Information Disclosure Statements filed on July 10, 2003 and December 20, 2005, as evidenced by the signed and initialed copies of the PTO-1449 Forms returned with the Office Action.

The Examiner recites, at pg. 2, ¶2 of the Office Action, however, that "*due to the unusually large number of references cited...and the absence of any description of the relevance of the references, it should be assumed that only the most cursory review of the cited documents consistent with these guidelines has been performed.*" The "guidelines" to which the Examiner cites appear to be guidelines for "reexamination" of cases. The above-referenced application is not a reexamination.

Applicants further note that the Examiner's qualification of the level of review of the cited references is not supported by the MPEP.

DRAWINGS

The Examiner has objected to FIG. 1 for failing to include a --Prior Art-- legend, and to FIG. 6 for a misspelling of the term "acceleration" [Office Action, pg. 3, ¶'s 3-4]. In response, Applicants have attached two sheets of drawings in **APPENDIX A** replacing the sheets depicting FIG. 1 and FIG. 6 as originally filed. The replacement sheet for FIG.1 includes a --Prior Art-- legend, and the spelling of the term "acceleration" has been corrected in the replacement sheet for FIG. 6. Accordingly, withdrawal of the drawing objections is earnestly sought.

SPECIFICATION

The Specification has been amended to include related application data. No new matter has been added.

REJECTIONS UNDER 35 U.S.C. §112, SECOND PARAGRAPH

Claims 18-20 stand rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point and distinctly claim the subject matter which applicant regards as the invention. In particular, the Examiner alleges that the recitation, in claim 18, of "*the filter positioned in step d)*" lacks sufficient antecedent basis [Office Action, pg. 4, ¶6]. The amendment to claim 18 has rendered this rejection moot.

REJECTIONS UNDER 35 U.S.C. §103

Claims 1-20 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 5,210,702 to Bishop *et al.* ("Bishop") in view of U.S. Patent No. 4,678,914 to Melrose *et al.* ("Melrose") [Office Action, pg. 5, ¶9]. Applicants traverse this rejection for *at least* the reason that the Examiner has failed to establish a *prima facie* case of obviousness.

A. Independent Claims 1 and 10.

Independent claims 1 and 10 are directed to a device and method, respectively, for remotely determining concentrations of at least two exhaust gas constituents of a vehicle emission plume using, among other things, at least two filters arranged on a rotatable filter wheel, and a *single* detector. The at least two filters are sequentially positionable to receive radiation from a radiation source after the radiation has passed through the emission plume of a moving vehicle, and each of the at least two filters is capable of filtering out radiation except for a predetermined wavelength band. The detector is positioned such that radiation from the radiation source may be sequentially directed onto the detector via the at least two filters to thereby produce at least two detector responses proportional to the intensity of radiation directed onto the detector via the at least two filters.

Bishop, which is the primary reference relied upon by the Examiner, discloses a gas analysis device for the remote detecting, measuring, and recording of NO_x, CO, CO_2, HC, and H_2O levels from the exhaust of moving motor vehicles [Bishop, Abstract]. Whereas Applicants' invention, as claimed in independent claims 1 and 10, uses at least two filters arranged on a rotatable filter wheel, Bishop discloses the use of a plurality of filters (37)

which are *not* movable. Moreover, independent claims 1 and 10 each recite the use of a *single* detector, while Bishop's device relies on a *plurality* of infrared detectors (35) [Bishop, col. 6, lines 33-49; & FIG. 3].

In the Office Action, the Examiner acknowledges the foregoing deficiencies of Bishop, and therefore relies on the teachings of Melrose in an effort to recreate Applicants' claimed invention:

> It is well known in the art that multi-channel signal acquisition using a plurality of detectors to generate a plurality of signals (such as disclosed by *Bishop*) and time-multiplexed signal acquisition using a single time-multiplexed detector to generate a plurality of signals (such as disclosed by *Melrose*) are functionally equivalent design choices such that substitution of one for the other would be an obvious design choice within the skill of a person of ordinary skill in the art depending on the needs of the application. As such the modification of *Bishop* in view of *Melrose* so as to use a plurality of movable filters and a single detector as disclosed by *Melrose* would be obvious to one skilled in the art in view of the known functional equivalence thereof.

[Office Action, pg. 5, ¶9].

Applicants disagree with the Examiner's assertion that (1) multi-channel signal acquisition using a plurality of detectors –and- (2) time-multiplexed signal acquisition using a single time-multiplexed detector are functionally equivalent design choices within the skill of a person of ordinary skill in the art.

The Examiner, for instance, disregards the differences between the art of remotely determining concentrations of gas constituents in an "*open-air*" environment versus the art of analyzing gases in a sample cell or chamber. Bishop is directed to measuring exhaust gas constituents in an "*open air*" environment (*e.g.*, the radiation source directs radiation through an emission plume of a moving vehicle). Melrose, by contrast, is apparently directed to a gas analyzer for analyzing gas that is contained within a sample cell [Melrose, *e.g.*, Abstract; &

FIG. 2]. Applicants' Specification addresses the differences between testing in these two environments (and refers to the device of Melrose directly):

> Another gas analysis device is disclosed in U.S. Pat. No. 4,678,914. This device employs an infrared (IR) gas analyzer in which IR radiation from a source is directed toward an IR detector. The IR radiation passes through both a gas located in a sample cell and then one of various light filters mounted on a continuously rotating filter wheel. This device requires close proximity to an emissions output in order to operate properly, and employs a sample chamber for gas analysis. Devices which employ a gas sample chamber are not feasible for remote sensing of vehicle emissions because of the need to collect a sample of the emission and isolate it in the gas sample chamber. Also, such devices only provide a localized reading of the gas at the exact point where the sample is taken.
>
> [Specification, pg. 2, line 17 – pg. 3, line 4].

The Examiner's finding of "functional equivalence" further disregards the disadvantages, identified by Applicants in the Specification, of remote emissions sensing systems (which were known at the time of Applicants' invention - such as that disclosed in Bishop) which include a *plurality* of detectors:

> Such devices, however, may have certain drawbacks. These devices may have a large number of parts to manufacture, assemble, align, maintain, and calibrate, including special reflectors, multiple detectors and multiple light filters. Each of these parts introduces error into the final measurements. For example, light filters may suffer from light bleed, allowing undesirable wavelengths of light to reach the detectors. **Uncertainty as to the measurements may also occur because different detectors may react differently to the variety of conditions encountered during the use of these devices.**
>
> [Specification, pg. 2, line 17 – pg. 3, line 4, **emphasis added**].

The foregoing passage teaches *away* from the Examiner's contention that a single detector and multiple detectors are equivalents and that selecting one over the other is a mere exercise of design choice. For at least the foregoing reasons, the Examiner has failed to set forth a legally proper teaching, suggestion, or motivation to modify Bishop to include the

teachings of Melrose. As such, the Examiner has failed to establish a *prima facie* case of obviousness.

Should the Examiner maintain the rejection, Applicants request that the Examiner provide evidentiary support to support the allegation that the use of at least two filters arranged on a rotatable filter wheel along with a *single* detector was known in the art of remotely determining concentrations of gas constituents in an "*open-air*" environment.

Accordingly, the rejection of independent claims 1 and 10 is improper and should be withdrawn. Dependent claims 3-9, 12-13, and 15-17 are allowable because they each depend from an allowable independent claim, as well as for the further features they recite.

With particular regard to dependent claims 3-6, 12-13, and 16-17, Applicants traverse the Examiner's rejections and request that the Examiner provide evidentiary support to support the allegations that the features recited therein constitute "obvious design choice" within the art of remotely determining concentrations of gas constituents in an "*open-air*" environment.

B. Independent Claim 18.

Independent claim 18 is directed to a method for remotely determining concentrations of at least two exhaust gas constituents of a vehicle emission plume using, among other things, multiple stationary filters (*e.g.*, a first filter and second filter) and a *single* movable detector.

It is clearly evident that neither Bishop nor Melrose, either alone or in combination, disclose, teach, or suggest *at least* the claimed feature of using a *single* detector whose position can be altered. To establish *prima facie* obviousness of a claimed invention, all the

claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 985, 180 U.S.P.Q. (BNA) 580 (C.C.P.A. 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. (BNA) 494, 496 (C.C.P.A. 1970). For at least this reason, the rejection is improper and should be withdrawn.

In the Office Action, the Examiner acknowledges that Bishop does not disclose the use of a *single* detector whose position can be altered [Office Action, pg. 8]. The Examiner makes an unsupported leap, however, by pointing to the *movable* filters in Melrose and alleging that it would be "obvious design choice" to keep the filters stationary and reposition the radiation beam and detector:

> It would be obvious to one of ordinary skill in the art that the same result could be obtained by repositioning the radiation beam and the detector in regard to the filters, since it is the relative movement that allows for time multiplexing. One skilled in the art would recognize that the benefit of time multiplexing is that fewer detectors are required. As such, it would have been an obvious design choice within the skill of a person of ordinary skill in the art depending on the needs of the application to substitute a single movable detector generating a plurality of time-multiplexed signals for the plurality of detectors as disclosed by *Bishop* in order to reduce the required number of detectors.
>
> [Office Action, pg. 8].

Applicants disagree. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 1074, 5 U.S.P.Q. 2d (BNA) 1596, 1598-99 (Fed. Cir. 1988). In this instance, the Examiner has provided no evidentiary support whatsoever for the rejection. The Examiner has failed to establish that moving either the radiation beam (which would require additional equipment

and alignment methods) or the detector were within the knowledge generally available to one of ordinary skill in the art at the time the invention was made, nor has the Examiner pointed to any teaching, suggestion, or motivation to do so found in the references themselves. As such, it appears as though the rejection is merely an unsupported assertion. If a rejection under §103 is merely an unsupported assertion or mere speculation, the burden does not shift to the applicant, but rather remains on the Patent Office Examiner. *In re Donaldson*, 16 F.3d 1189, 29 U.S.P.Q.2d (BNA) 1845 (Fed. Cir. 1994).

For at least the foregoing reasons, the Examiner has failed to establish a *prima facie* case of obviousness. Should the Examiner maintain the rejection, Applicants request that the Examiner provide evidentiary support to support the allegation that the use of multiple stationary filters (*e.g.*, a first filter and second filter) and a *single* movable detector was known in the art of remotely determining concentrations of gas constituents in an "*open-air*" environment.

Accordingly, the rejection of independent claim 18 is improper and should be withdrawn.

CONCLUSION

Having addressed each of the foregoing rejections, it is respectfully submitted that a full and complete response has been made to the outstanding Office Action and, as such, the application is in condition for allowance. Notice to that effect is respectfully requested.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Date: June 14, 2006

Respectfully submitted,

By: _____

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APPENDIX A

Replacement Sheets for FIG. 1 and FIG. 6